



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

January 15, 2021

Andy McGehee, PE
Chief Technical Officer
Synergy Solutions of Crisp County, LP
155 Landfill Road
Cordele, Georgia 31015

Dear Mr. McGehee:

This is in response to your letter, dated November 9, 2020, to the Environmental Protection Agency (EPA) requesting an applicability determination (AD) for Title 40, Code of Federal Regulation (CFR), Part 60, Subpart AAAAA — Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999, or for Which Modification or Reconstruction is Commenced After June 6, 2001. Your AD request is for a proposed municipal solid waste (MSW) gasifier and associated close-coupled thermal oxidizer (TO) at Synergy Solutions of Crisp County, LP (Synergy) in Cordele, Georgia. On November 10, 2020, R4 requested additional information from you, and received the requested information on December 9, 2020. Based upon our review of the information you provided, we have determined that Subpart AAAAA would be applicable to the proposed process. The details of our AD are explained in the remainder of this letter.

Synergy Overview of the Proposed Cordele Process

Synergy proposes to accept and gasify MSW at its Cordele facility. Upon receipt of MSW at the facility, bulk items will be removed from the received MSW and either landfilled or recycled. The remaining MSW will be processed through a shredder. Residual MSW exiting the shredder will be sent to a continuously stirred tank vat where water, heat, and a vacuum will be used to break down the residual MSW. Each vat cycle will process approximately 10 tons of MSW. The residual MSW exiting the vat will be sent to a trommel screen to produce a three-quarter inch to one inch minus grade refined residual MSW substrate material. Non-organic materials (ferrous metals, non-ferrous metals and plastics) separated during the screening process will either be sent to a recycling center or landfill.

The refined residual MSW will be processed through additional screening operations to produce a feedstock material (wet fluff) which will be processed through a direct-heat rotary dryer for moisture removal. The dried fluff will be sent to a self-sustaining (no assist fuel necessary) fixed-bed gasifier which will produce char and synthetic gas (syngas: hydrogen, carbon monoxide and volatile organic compounds). While the exact feed rate has not been provided, you have indicated that a processing rate of at least 35 tons per day, but not greater than 250 tons per day of dried fluff to the gasifier is proposed. In addition to dried fluff entering the gasifier, only air will be added to maintain sub-stoichiometric oxygen conditions during normal operation. Assist fuel will be used during startup. After normal operation is achieved, the gasifier's operation will be self-sustaining without the need of assist fuel. Combustion will not occur within the gasifier. The char product from the gasifier will be marketed to

consumers. A portion of the gasifier's syngas will be used as fuel for the TO operation; the TO will provide heat energy for the fluff drying operation.

Combustion of the syngas produced by the gasifier will occur within a close-coupled TO adjoining the dried-fluff gasification chamber. Flue gas from the TO will be controlled within the temperature range of 1,600-1,800 Fahrenheit and will be sent directly to the dryer. The volumetric flow of the syngas to the TO is controlled with a damper in the roof of the gasifier in order to maintain the desired temperature and humidity in the fluff dryer. Combustion-air is added to the TO by an air-ring located in the gasifier/TO mechanical transition, and no assist fuel will be necessary for operation of the TO. Excess syngas, not needed for the drying operation, will bypass the TO and be emitted directly to the atmosphere. Flue gas from the TO will serve as the only source of heat energy to the fluff dryer. The dryer's effluent gases will be sent to a cyclone to control particulate matter emissions, and exhaust gases from the cyclone will be routed to an atmospheric emissions stack.

Synergy's Proposed Basis of Subpart AAAA Non-Applicability to the Proposed Cordele Process

In your letter, you requested consideration of whether the primary function of the TO within the proposed process may be considered air pollution control instead of a municipal waste combustion unit subject to Subpart AAAA. The basis for your request is that, according to the definition of municipal waste combustion unit (MWCU) in Subpart AAAA, air pollution control equipment is not part of the affected source subject to the emission standard in the rule.

The EPA's Overview of Subpart AAAA Applicability Criteria, Selected Definitions, and Regulated Pollutants

Under provisions of §60.1010 (a-b), Subpart AAAA is applicable to MWCUs for which construction is commenced after August 30, 1999, or for which modification or reconstruction is commenced after June 6, 2001, and that have the capacity to combust at least 35 tons per day but no more than 250 tons per day of municipal solid waste. Under definitions of §60.1465, municipal solid waste or municipal-type solid waste means "... household, commercial/retail, or institutional waste", including refuse-derived fuel. Refuse-derived fuel means "... a type of municipal solid waste produced by processing municipal solid waste through shredding and size classification", which includes all classes of refuse-derived fuel.

A MWCU includes any setting or equipment that combusts solid, liquid, or gasified MSW, but does not include pyrolysis or combustion units located at a plastics or rubber recycling unit as specified under the applicability provisions of §60.1020 [(h)-(i)]. A MWCU also includes, but is not limited to, the MSW feed and grate systems and the associated combustion flue gas system but does not include air pollution control equipment or the stack. Furthermore, the MWCU boundary ends immediately after the heat recovery equipment or, if there is no heat recovery equipment, immediately after the combustion chamber.

Subpart AAAA establishes emission standards for organics (dioxins/furans), metals (cadmium, lead and mercury), opacity, particulate matter, acid gases (hydrogen chloride, nitrogen oxides and sulfur dioxide), carbon monoxide and fugitive ash.

The EPA's Clarification of Subpart AAAA Intent

Emphasizing selected language contained in the definition of MWCU within Subpart AAAA, to address the relevant circumstances of Synergy's proposed Cordele process, *a MWCU includes any setting that combusts gasified municipal solid waste*. The definition of MWCU also provides examples of equipment, or settings, that may be characterized as MWCU(s), but this list is not exclusive. If gasifier/combustion units are integrated, like pyrolysis/combustion units may be, they are considered MWCU(s). The intent of the language relating to "any type of setting or equipment" contemplates that a gasifier/combustion unit, similar to a pyrolysis/combustion unit, may consist of one piece of equipment, but can also consist of multiple pieces of equipment within a site-specific setting.

In determining the boundary of a MWCU combusting syngas produced by a gasifier, the EPA considers post-MSW gasification syngas processing, cleaning, and conditioning steps which may separate the gasification process from the combustion process. The evaluation of such processing steps is used by the EPA to determine whether the gasification and combustion operations are separate or integral, from/to one another. The determination of whether the gasification/combustion unit is considered one piece of equipment or more than one piece of equipment (*e.g.*, an integrated unit), is based on site-specific facts, including, but not limited to, the design and operation of the gasification and combustion chambers/zones, the proximity of the gasification and combustion chamber/zones to one another, the presence (or absence) of syngas cleaning steps (*e.g.*, electrostatic precipitation, scrubbing, filtering, or cyclonic separation) or processing steps (*e.g.*, compression, distillation or pressure-swing-absorption) between the gasification chamber/zone and the combustion chamber/zone and whether the operation(s) are integrated and dependent upon one another or not. or not.

The EPA's Applicability Determination

Based on our review of the information you provided, we have determined that the proposed gasifier/TO combustion unit would be an integrated gasifier/combustion unit, which is a MWCU according to §60.1465, subject to the provisions of Subpart AAAA. Our determination is based on the following reasons:

- 1) The MSW processing capacity of the proposed operation (at least 35 tons per day, but not more than 250 tons per day) falls with the range of processing rates for facilities covered by Subpart AAAA.
- 2) The process downstream of the TO cannot feasibly operate without the TO.
- 3) The amount of heat energy generated in the TO is controlled by the gasifier's roof vent damper positioning mechanism, which in turn, is controlled by the demand for heat energy needed by the fluff dryer. In other words, the volumetric flow of the gasifier's production syngas (fuel) to the TO is controlled by feedback control measurements of the fluff dryer's flue gas temperature and humidity, directly correlated in the process control schema to the fluff dryer fluff-product moisture composition, and will be controlled by a damper control positioner located on a damper in the roof of the gasifier. The operation of the TO is dependent on the gasifier's process control of the "dryer process efficiency" specifications, not independent.

- 4) The heat energy contained in flue gas resulting from the combustion of syngas within the TO is the only source of heat energy input to the fluff dryer, which is generated and controlled by the gasifier.
- 5) For the proposed Synergy operation, the syngas produced by the gasifier is combusted directly in the adjoining TO. The gasifier and the TO are connected by a short mechanical transition duct without additional significant processing, cleaning or conditioning of the syngas occurring prior to combustion.
- 6) No assist fuel will be needed to sustain the steady state operation of the TO after achieving normal combustion operation with the gasifier's production syngas, only air to maintain combustion within the limits of flammability.
- 7) Excess syngas not needed for the drying operation will bypass the TO and be emitted directly to the atmosphere by the damper's positioning control. In other words, the gasification/combustion unit only uses the fuel necessary to maintain dryer fluff-product moisture composition at optimized conditions for gasification.

This AD was coordinated with the EPA's Office of Enforcement and Compliance Assurance (OECA), Office of Air Quality Planning and Standards (OAQPS) and R4's Enforcement and Compliance Assurance Division (ECAD). If you have any questions about this AD, please contact Tracy Watson at (404) 562-8998, or by email at watson.marion@epa.gov.

Sincerely,

For Caroline Y. Freeman
Director
Air and Radiation Division

cc: David Harlow, EPA OAR
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